

PP-54

Mycorrhizal Association in Quinoa (*Chenopodium Quinoa* Willd.) Increase Phosphate Uptake Under Water Stress Condition

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Background:

The influence of soil moisture on the infection, hyphal development and uptake of **P** of a VA mycorrhizal fungus *Glomus fasciculatum* in Quinoa was studied at four different moisture levels (-0.2; -0.6; -1.2 and -2.4 MPa).

Methods and Preliminary results: The experiment is carried out in soil which was a phosphorus deficient black sandy loam soil (pH 7.2) containing 4 mg/kg. NaHCO₃ soluble P (Olsen et al., 1954). Earthen pots with 5 kg of soil were sterilized for one hour and stored at room temperature for one week. *Glomus fasciculatum* (Thaxter sensu Gerd.) Gerd. and Trappe) maintained in pot culture which was used as inoculum. 50 ml of inoculum and infected roots (85%) was uniformly distributed below 2 cm in all pots. For control treatment the sieved soil suspension was added to maintain the rhizosphere of soil. 3 Quinoa plants were grown per pot. The spore content was increased only 10% in lowest moisture levels. These results suggest that at the altered soil moisture levels the degree of infection and extra radical mycelium are altered to meet the water requirement of the plant.

Preliminary conclusion: There was an increase in the amount of N in roots than shoots with respect to control plants. Ponder (1983) found that VAM by passing the dry zones and P depletion zones through the extended root system by external fungal Hypae in black walnut. Similarly here also there was an increase in the intensity of VAM colonization spore number and Hyphal density in high water stress condition (-2.4MPa). And the high soil moisture level was not favourable for fungal colonization because of water logging and oxygen deficiency.